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FLOOD INSURANCE STUDY

VILLAGE OF NEWARK, NEW YORK
WAYNE COUNTY

BEST COPY AVAILABLE

JULY 15, 1988

Federal Emergency Management Agency

COMMUNITY NUMBER - 360894

COMPLETED

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program (NFIP) have established repositories of flood hazard data for floodplain management and flood insurance study purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

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FLOOD INSURANCE STUDY
VILLAGE OF NEWARK, WAYNE COUNTY, NEW YORK

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study revises and updates a previous Flood Insurance Study/Flood Insurance Rate Map for the Village of Newark, Wayne County, New York. This information will be used by the Village of Newark to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP). The information will also be used by local and regional planners to further promote sound land use and floodplain development.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the state (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses in this study represent a revision of the original analyses prepared for the Federal Emergency Management Agency. The hydrologic and hydraulic analyses in this revision were prepared by Goodkind and O'Dea, Inc., Consulting Engineers, during the preparation of the Flood Insurance Study for the Town of Arcadia.

1.3 Coordination

On May 17, 1987, the Village of Newark was notified by the Federal Emergency Management Agency (FEMA) of the initiation of an updated Flood Insurance Study for the community.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the Village of Newark, Wayne County, New York. The area of study is shown on the Vicinity Map (Figure 1).

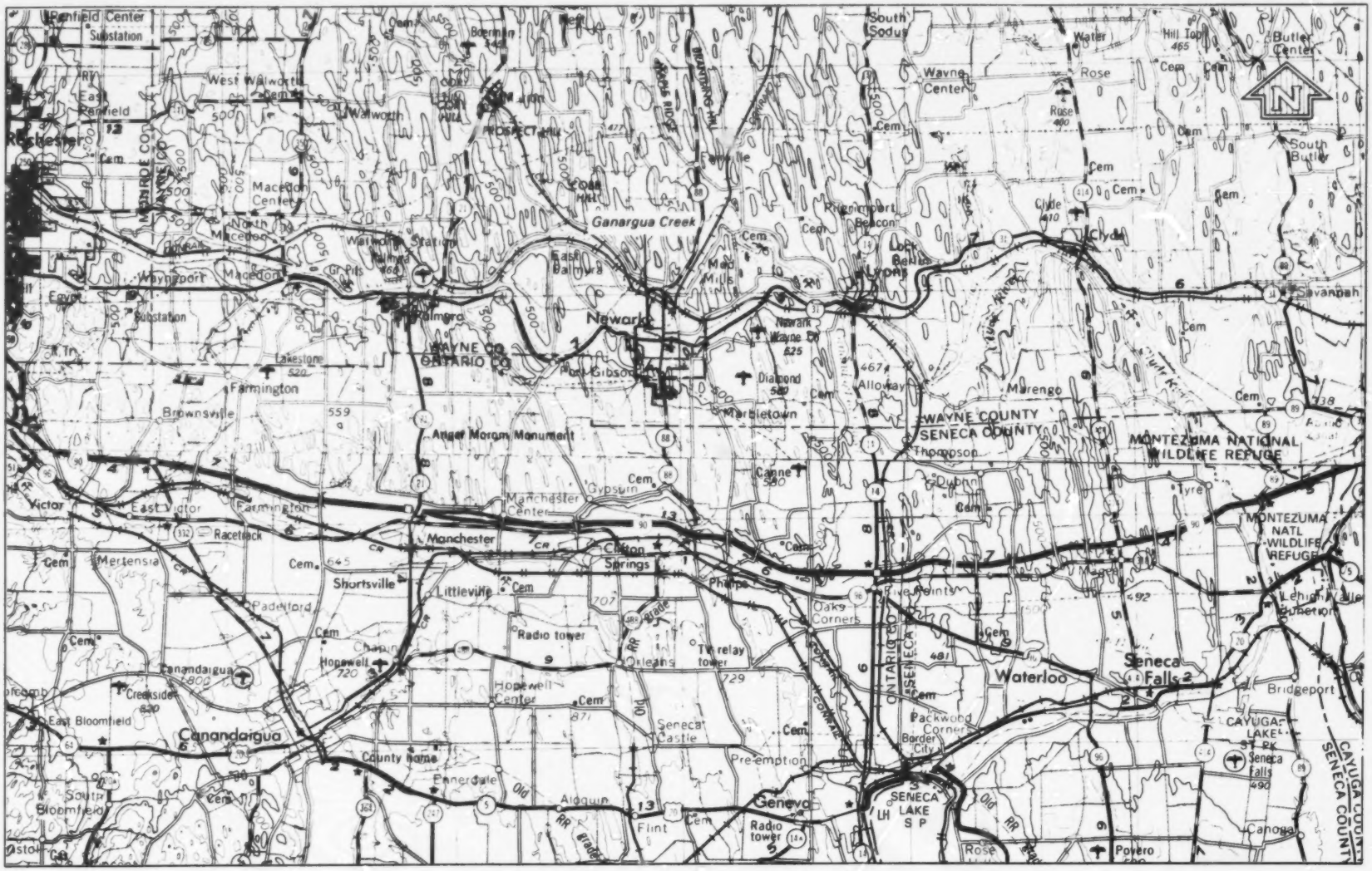

FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

VILLAGE OF NEWARK, NY
(WAYNE CO.)

APPROXIMATE SCALE

4 0 4 8 12 MILES

VICINITY MAP

Ganargua Creek was studied by detailed methods for its entire length of flooding within the community. The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction.

An unnamed tributary to Ganargua Creek was studied by approximate methods. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards.

2.2 Community Description

The Village of Newark is located in the southern portion of Wayne County in north-central New York State. It is completely surrounded by the Town of Arcadia. Wayne County is directly east of Monroe County, which is a part of the Rochester metropolitan area. The center of the Village of Newark is approximately 35 miles southeast of the City of Rochester.

Historically, the Newark area has been a center for trade and employment in Wayne County; however, the population growth has been gradual in recent years due to the decline of the railroads in the area and somewhat distant access to the New York State Thomas E. Dewey Thruway (Reference 1).

Wetlands, which are unsuitable for development, are located in the northeastern part of the village along the Barge Canal and, particularly, in the stream course of Ganargua Creek. Glaciation and various periods of advancing and receding ice sheets have had a great influence on the soil of the Village of Newark. The soils, ranging from good to moderate drainage capabilities, are mainly derived from glacial till and glacial outwash and have good agricultural potential. However, the drumlin topography of the area prohibits the use of much of the land for crops.

The Village of Newark has a temperate climate. The winters are long and have a mean temperature of approximately 25 degrees Fahrenheit (^{o}F), while the summers are short and pleasant with a mean temperature of 69^{o}F. The average annual precipitation is 30.8 inches, and the mean annual snowfall is 69.4 inches (Reference 1).

The Village of Newark is located in what is described as the Central Lowland Till Plain, a level or undulating topography with elevations ranging from 425 to 700 feet. The outstanding features of the landscape are the drumlins running north to south, and the east-west glacial stream channel of Ganargua Creek, which follows a winding course through the southern part of the town. Drainage patterns follow the valley troughs into the well-defined glacial channel, which is 0.25 to 0.50 mile wide (Reference 1).

2.3 Principal Flood Problems

Ganargua Creek, which affects flooding in Newark, flows in a meandering, well-defined channel. Annual flooding occurs throughout the wide floodplain area. Agricultural damages account for most of the losses. More serious flooding problems usually result from spring runoff combined with snow melting and ice-jams at bridges and culverts (Reference 1).

2.4 Flood Protection Measures

There are no structures within the Village of Newark that were constructed for flood control.

3.0 ENGINEERING METHODS

For the flooding source studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1 percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for the flooding source studied in detail affecting the community.

For Ganargua Creek, the peak discharge information was obtained from the Flood Insurance Study for the Town of Arcadia (Reference 2). In that study, the discharge-frequency data were defined using two methods of analysis at the point where the creek flows over Harrison's Spillway in the Town of Palmyra. The first was a regional analysis relating basin characteristics to stream flow

characteristics (Reference 3). The second method employed ratios between the mean annual flood discharge for a given drainage area and the 10- and 50-year discharges (Reference 4). The first method was also used in obtaining the discharge-frequency relationship for Marbletown Creek. Since there were very few gages analyzed near the Ganargua Creek drainage area in the formulation of the second method, the relations were adjusted by utilizing peak flows at two partial record U. S. Geological Survey (USGS) gaging stations on Ganargua Creek (References 5 and 6). Gage No. 04234250 at Macedon with records from October 1965 to September 1969 and gage No. 04234200 at East Victor with a length of record from April 1958 to September 1968 were used for the adjustment.

The resulting adjusted discharges were averaged with those discharges from the first analysis to obtain flood discharges for the required recurrence intervals of 10- and 50-years. The 100- and 500-year flood discharges were determined by using a straight line extrapolation of the log-probability plot of the computed discharges. The additional 375 cubic feet per second (cfs) "Summer Feed" from Lake Erie was then added to each of these discharges (Reference 7). The discharge-frequency relations established at the spillway were translated to other sites in the study area using the equation $Q_s = Q_g (A_s/A_g)^a$, where Q_s and Q_g are the flows at the desired point and at the gage, respectively; and A_s and A_g are the drainage areas at the desired point and at the gage, respectively. A value of 0.74 was used for "a" based on a USGS publication (Reference 4).

A summary of the drainage area-peak discharge relationships for the stream studied by detailed methods is shown in Table 1, "Summary of Discharges."

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
GANARGUA CREEK					
At downstream Arcadia corporate limits	239.9	5,025	6,635	7,405	9,125
At upstream Arcadia corporate limits	207.4	4,555	6,000	6,695	8,245

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the source studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

The hydraulic analysis for Ganargua Creek was taken from the Flood Insurance Study for the Town of Arcadia (Reference 2).

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1) and the Flood Insurance Rate Map (Exhibit 2) where applicable.

Water-surface elevations of floods of the selected recurrence intervals were computed using the COE HEC-2 step-backwater computer program (Reference 8. The HEC-2 computer model was adjusted until the profile for the June 1972 flood passed through the high-water marks obtained for that flood. Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals. Starting water-surface elevations for Ganargua Creek were determined by the slope/area method.

Roughness factors (Manning's "n") used in the hydraulic computations for Ganargua Creek were estimated by field inspection at each cross section. Channel "n" values ranged from 0.035 to 0.045, and the overbank "n" values ranged from 0.045 to 0.080.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD).

The approximate boundaries for the unnamed tributary to Ganargua Creek were determined using slope/area calculations for typical stream reaches in the area.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. Therefore, each Flood Insurance Study provides 100-year flood elevations and delineations of the 100- and 500-year floodplain boundaries and 100-year floodway to assist in developing floodplain management measures.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2 percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For the stream studied in detail, the 100- and 500-year floodplain boundaries have been

delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:24,000 with a contour interval of 10 feet (Reference 9).

For the unnamed tributary to Ganargua Creek, the approximate boundaries were delineated using topographic maps and the previous Flood Insurance Study for the Village of Newark (References 9 and 10).

The 100- and 500-year floodplain boundaries are shown on the Flood Insurance Rate Map (Exhibit 2). On this map, the 100-year floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE), and the 500-year floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 100- and 500-year floodplain boundaries are close together, only the 100-year floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the stream studied by approximate methods, only the 100-year floodplain boundary is shown on the Flood Insurance Rate Map (Exhibit 2).

4.2 Floodways

The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights.

Floodways for Ganargua Creek were computed for the Flood Insurance Study for the Town of Arcadia and occur outside the corporate limits of the Village of Newark; therefore, no floodways are shown in this study.

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. The zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by detailed methods. In most instances, whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AH

Zone AH is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO

Zone AO is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-depths derived from the detailed hydraulic analyses are shown within this zone.

Zone A99

Zone A99 is the flood insurance rate zone that corresponds to areas of the 100-year floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or depths are shown within this zone.

Zone V

Zone V is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no base flood elevations are shown within this zone.

Zone VE

Zone VE is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 500-year floodplain, areas within the 500-year floodplain, and to areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

Zone D

Zone D is the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

6.0 FLOOD INSURANCE RATE MAP

The Flood Insurance Rate Map is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 100-year floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 100- and 500-year floodplains. Floodways and the locations of selected cross sections used in the hydraulic analyses and floodway computations are shown where applicable.

7.0 OTHER STUDIES

A Flood Insurance Study has been prepared for the Town of Arcadia (Reference 2). The results of this study are in exact agreement with the results of that study.

Due to its more up-to-date analyses, this study supersedes the previous Flood Insurance Study for the Village of Newark (Reference 10).

8.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting FEMA, the Natural and Technolcgical Hazards Division, 26 Federal Plaza, Room 1351, New York, New York 10278.

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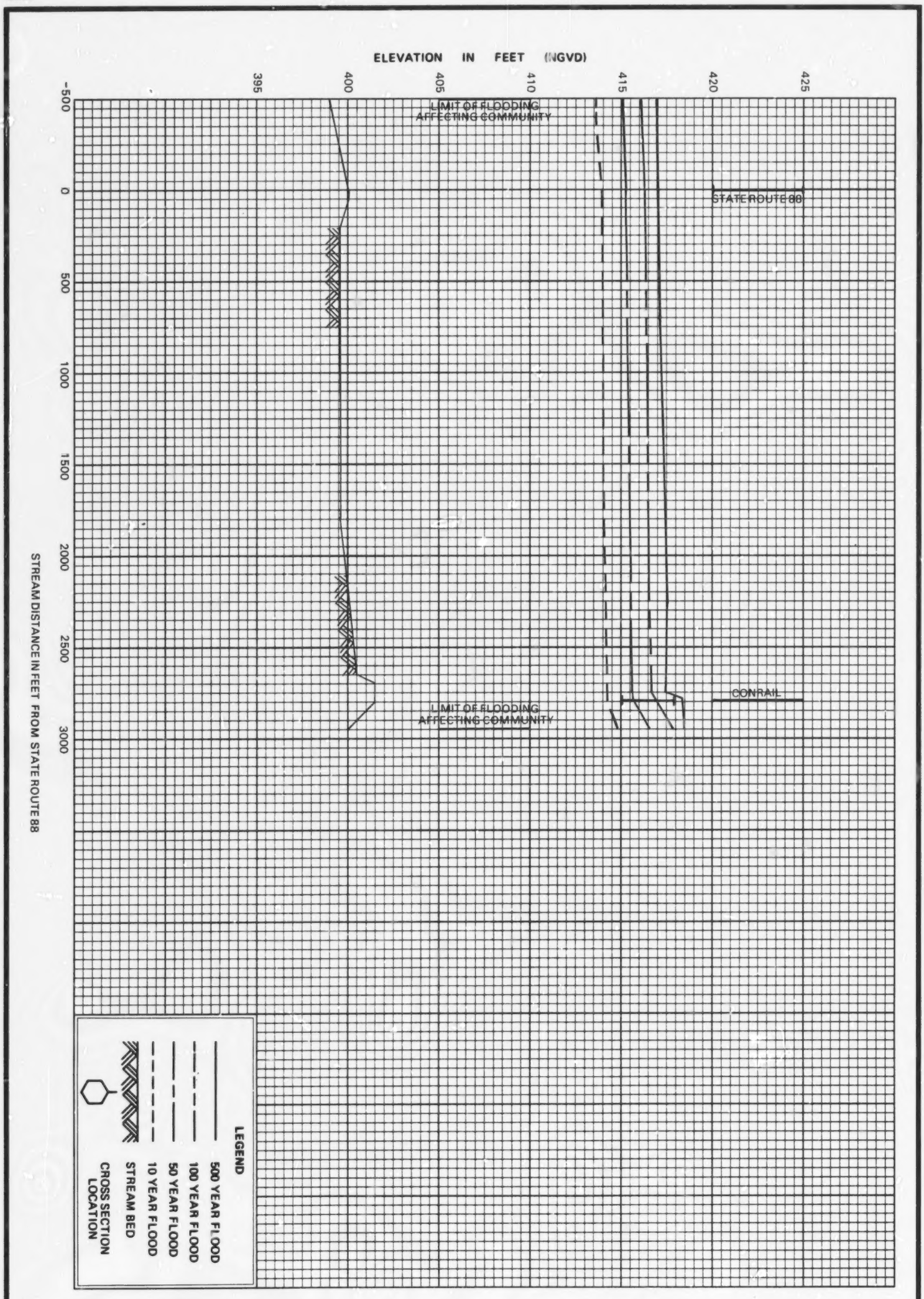

01P	FEDERAL EMERGENCY MANAGEMENT AGENCY VILLAGE OF NEWARK, NY (WAYNE CO.)	FLOOD PROFILES GANARGUA CREEK